Davidson County, Tennessee Fetal and Infant Mortality Report, 1989-1998

Metropolitan Health Department of Nashville and Davidson County, Tennessee December 2000

METROPOLITAN HEALTH DEPARTMENT

of Nashville and Davidson County, Tennessee

Fetal & Infant Mortality Report, 1989-1998



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METROPOLITAN
HEALTH DEPARTMENT OF NASHVILLE AND DAVIDSON COUNTY

Fetal and Infant Mortality Report, 1989-1998

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Message from the Director of Health

Both individuals and the community at large share responsibility for working toward the best possible health status for Davidson County. Information is crucial to that process. The goal of this report is to provide information which can help guide actions toward health improvement in our community.

The Nashville Metropolitan Health Department (MHD) anticipates the implementation of a Fetal-Infant Mortality Review Committee (FIMR) for Davidson County. In 1994, a Child-Death Review Committee was established by Executive Order. The outcome objective is the establishment of systems at the community, institutional, family, and individual level to improve birth outcomes.

Additionally, in 1994 with the advent of TennCare, the MHD refocused its efforts from the direct provision of primary and prenatal care and focused its efforts toward assessment and community mobilization.

This document presents analysis of fetal-infant mortality in Davidson County from 1989 - 1998. Fetal mortality is defined as the death of a fetus in utero at 20 weeks or more gestation. It is viewed as an important indicator of overall perinatal wellness. Infant mortality is defined as the death of a child before one year of age. The infant mortality rate is an indicator of social, economic, and community factors as well as medical and health conditions.

This analysis will be the basis for development of the Fetal-Infant Mortality Review Committee for Davidson County. The committee will complement and be a sub-committee of the present Child Death Review Committee.

The United States infant mortality rate decreased to 7.2 in 1997, approaching the Year 2000 goal of 7 deaths per 1,000 live births. This decrease is attributed to the discovery of new medical treatments such as surfactants, improved screening for fetal abnormalities, regional transport for high-risk deliveries, improvements in case management, and increase in early enrollment for prenatal care. Protective maternal and family health behaviors-such as breastfeeding, not smoking, and placing infants on their backs to sleep-also contributed to this decrease.

However, this decrease is not uniform across many of the nation's communities. In Nashville as in other communities across the country, infants born into poor families are twice as likely to die as those born to families above the poverty level. Also, the infant mortality rates for African Americans and Native Americans, as well as some subgroups of Latinos, are higher than the overall rate. The African American rate is at least double the rate for white infants. Surgeon General David Satcher targeted elimination of these disparities by the Year 2010 as one of his six priority areas.

Stephanie B.C. Bailey, M.D., M.S.H.S.A., Director of Health



- The fetal mortality rate in Davidson County, Tennessee decreased between 1992 and 1996 but increased in 1997. This increase may be due in part to the increasing black fetal mortality rate. In 1998, the black fetal mortality rate was 9.7 fetal deaths per 1,000 live births plus fetal deaths in comparison to the white fetal mortality rate of 3.2 per 1,000 live births plus fetal deaths.
- In Davidson County, Tennessee, the fetal mortality rate stratified by age shows that maternal age greater than 35 was associated with higher rates of fetal mortality than any other age group regardless of race.
- Davidson County, Tennessee and Tennessee's fetal mortality rates were below that of the United States over the ten-year period from 1989-1998. However, the rates remained above the Healthy People 2000 objective of five fetal deaths per 1,000 live births plus fetal deaths.
- The three leading causes of fetal death were 1) complications associated with the placenta, umbilical cord, or membranes, 2) disorders related to short gestation/low birth weight, and 3) congenital anomalies, (34.1%, 7.2%, and 5.6%, respectively).
- The infant mortality rate in Davidson County, Tennessee reached a peak of 12 infant deaths per 1,000 live births in 1993. Although the rates decreased by 26.5% from 9.8 infant deaths per 1,000 live births in 1989 to 7.2 per 1,000 live births in 1998, they remained above the Healthy People 2000 objective of seven infant deaths per 1,000 live births.
- The disparity between white and black infant mortality rates narrowed over the 10-year period. However, the gap increased slightly in 1997 and 1998.
- The black infant mortality rate decreased dramatically since its peak in 1993, and remained lower than the rates for Tennessee and the United States.
- There was an increase in the neonatal mortality rate from 3.3 deaths per 1,000 live births in 1996 to 5.4 per 1,000 live births in 1998.
- The leading causes of neonatal deaths in 1998 were 1) short gestation/low birth weight, 2) congenital anomalies, 3) maternal complications of pregnancy, 4) infection, and 5) other respiratory conditions. The leading causes of postneonatal mortality were 1) SIDS, 2) congenital anomalies, and 3) accidents.
- Planning districts 1, 8, and 9 had the highest infant mortality rates for Davidson County, Tennessee in 1998.

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Fetal Mortality

1989 - 1998

he health of infants depends in large part on their health in utero. Fetal mortality rates (FMR) provide a more complete picture of perinatal health than does infant mortality alone. It reflects the overall state of maternal health, as well as the quality and accessibility of primary health care available to pregnant women.¹

Fetal death, an involuntary loss of a fetus during pregnancy, is an important indicator of poor pregnancy outcomes. The World Health Organization's (WHO) definition² of a fetal death is:

DAVIDSON

COUNTY, TN

- Fetal mortality in Davidson County
- FMR by race
- Sociodemographic factors
- FMR by age
- Leading Causes of fetal mortality

Fetal Death

Death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Observed Trends

Tennessee's criteria for reporting a fetal death is the death of a fetus greater than 500 grams and/or at least 22 weeks gestation.³ However, induced termination of pregnancy or abortion is excluded in fetal death reporting. The fetal mortality rates are expressed as the number of fetal deaths per 1,000 live births plus fetal deaths.⁴

Trends

The fetal death rate in Davidson County, Tennessee has fluctuated over the past ten years. The rate in 1998 was similar to the rate ten years prior in 1989. The overall fetal mortality rate showed signs of decline from 1992 until 1996. (Figure 1)

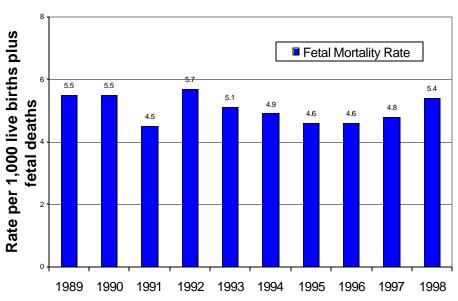


Figure 1: Fetal Mortality Rate, Davidson County, TN, 1989-1998

Race

One of the reasons that might be attributed to the increase in overall fetal mortality is the growing disparity between whites and blacks. From 1992 to 1996, the black/white ratio decreased from 2.02 to 1.89. However, from 1996 to 1998, the difference between black and white rates increased from 1.89 to 3.03. In 1998, there was a 3-fold gap between black and white fetal mortality rates, 9.7 per 1,000 live births plus fetal deaths and 3.2 per 1,000 live births plus fetal deaths respectively. (Figure 2) In 1994, the fetal mortality rate for blacks was 4.1, which was lower than that of whites. This would be surprising since the rates for all of the other years are at least twice as high for blacks than for whites. Although there were only 10 fetal deaths reported for blacks in that year, the reason for this significant reduction is yet to be determined. (Table B-2 in Appendix)

12 ■ FMR White ■ FMR Blacks 97 10 8.9 8.6 8.5 births plus fetal deaths 8.1 Rate per 1,000 live 6.7 5.2 4.1 3.8 3.3 3.3 3.2 1989 1990 1991 1992 1993 1994 1995 1996 1997

Figure 2: Fetal Mortality Rate by Race, Davidson County, TN, 1989-1998

Note: In 1989, the number of black births was unavailable to calculate rates for the year.

Sociodemographic Factors

Several sociodemographic factors are associated with fetal mortality. Characteristics such as marital status, education, race, age, prenatal care/visits, smoking/substance abuse, and parity can be risk factors associated with fetal mortality.⁵ Each of these characteristics has been researched, but science has not given us a definitive answer as to whether one or a combination of these factors is responsible for fetal death.

Between 1989-1998, the majority of mothers who experienced a fetal death had at least a high school diploma, 68.9%. (Table 1) Of the 44.5% of mothers, who were married to the father, 77.3% were white and 22.7% were black. Very few women reported smoking during their pregnancy. Of those who reported smoking, 9.9% smoked less than 10 cigarettes per day during their pregnancy, 6.8% reported 10-20 cigarettes per day, and less than 2% reported smoking greater than 20 cigarettes during their pregnancy. Since this information was based on self-report, comparisons should be made with caution.

In Davidson County, Tennessee, 78.7% of fetal deaths that occurred from 1989-1998 received prenatal care in the first trimester. (Table 1) Less than 8% of fetal deaths received no prenatal care during their pregnancy. The majority of fetal deaths occurred at less than 36 weeks gestational age. 40.3% (79) of fetal deaths occurred at less than 28 weeks gestational age among blacks compared to 29.0% in whites. The majority (42.5%) of white fetal deaths occurred between 28-36 weeks gestational age.

IN DAVIDSON COUNTY, THERE WERE 2,393
TERMINATIONSOF PREGNANCY, WHICH INCLUDES
FETAL DEATHS AND INDUCED TERMINATIONS OF
PREGNANCY DURING 1998.6

Table 1. Number of fetal deaths by educational attainment, age, smoking, prenatal care, gestational age, and race of mother, Davidson County, TN, 1989-1998

	White	Black	*	Missing
Education .	VVIIICO	Didok	Total	
Education	45	_	00	53
0-8 years	15	5	20	
9-11 years	38	55	97	
12 years	67	70	138	
13-15 years	32	36	68	
>16	40	10	52	
Married				10
Yes	140	41	188	
No	76	155	234	
Smoking				45
<10 Cigarettes	20	16	36	
10-20	18	7	25	
>20	4	3	7	
Non-smoker	145	142	297	
Prenatal Care				38
1st trimester	167	134	307	
2 nd	20	24	46	
3 rd	4	3	7	
No Care	14	14	30	
Gestational Age				8
<28 weeks	62	79	140	
28-36	91	75	169	
>37	61	42	105	

^{*}Includes races other than white and black.

Age

From 1990-1998, the fetal mortality rates stratified by age showed that the black fetal mortality rate was higher than the white fetal mortality rate regardless of age group. (Figure 3) For maternal age greater than 35 years of age, the black fetal mortality rate was 12 deaths per 1,000 live births plus fetal deaths, which is higher than the white fetal mortality rate of 3.4 deaths per 1,000 live births plus fetal deaths. Among teenagers (maternal age group less than 20 years of age), the black fetal mortality rate was 8.8 deaths per 1,000 live births plus fetal deaths compared to 4.5 deaths per 1,000 live births plus fetal deaths among whites.

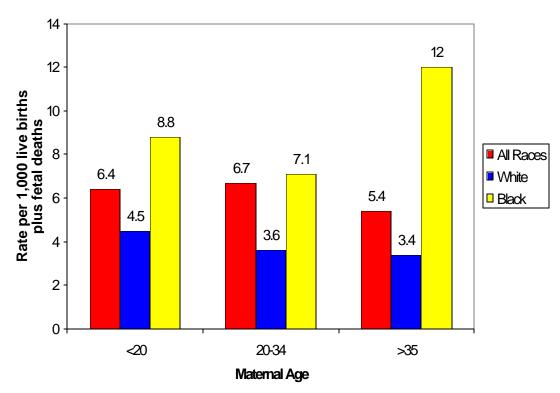


Figure 3: Fetal Mortality Rate by Maternal Age and Race, Davidson County, TN, 1990-1998

Note: The age range was 14-44 years.

Leading Causes

Of the 428 fetal deaths that occurred between 1989-1998, 36.2% were of unknown or unspecified origin. (Figure 4) The three leading causes of fetal death in Davidson County, Tennessee were 1) complications associated with the placenta, umbilical cord, or membranes, 2) disorders related to short gestation/low birth weight, and 3) congenital anomalies (34.1%, 7.2%, and 5.6%, respectively).

Figure 4: Leading Causes of Fetal Mortality, Davidson County, TN, 1989-1998

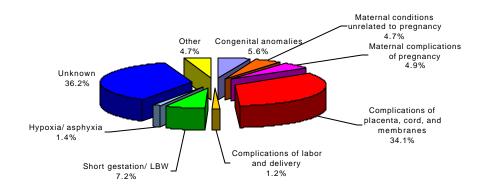


Table 2. Fetal Deaths by Underlying Cause, Davidson County, TN, 1989-1998

Leading Causes of Fetal Death	%	#
Unknown	36.2%	155
Complications of placenta, cord, and membranes	34.1%	146
Disorders related to short gestation/ low birth weight	7.2%	31
Congenital anomalies	5.6%	24
Maternal complications of pregnancy	4.9%	21
Other	4.7%	20
Maternal conditions unrelated to pregnancy	4.7%	20
Hypoxia/ asphyxia	1.4%	6
Complications of labor and delivery	1.2%	5



Infant Mortality

1989 - 1998

DAVIDSON COUNTY, TN

- Infant mortality in Davidson County
- IMR by race
- Low birthweight
- Leading causes of infant death
- Leading causes of neonatal death
- Leading causes of postneonatal death
- IMR by planning districts

nfant deaths, death of an infant under 1 year of age, are measures of a community's overall social and economic well being as well as its overall health.⁷ These sentinel events alert the community to an unmet need in prenatal care and health education in addition to other tangible factors. The infant mortality rate and the fetal mortality rate are two important indicators of poor pregnancy outcomes. There are two components to infant mortality rates: neonatal and postneonatal mortality. The neonatal mortality rate is measured as the death of an infant less than 28 days. The postneonatal mortality rate is measured as the death of an infant 28 days to 1 year of life.⁸

Because it is based on small numbers, Davidson County, Tennessee's infant mortality rate can fluctuate from year to year.

Observed Trends

Trends

In Davidson County, Tennessee, the infant mortality rate has fluctuated over the past 10 years reaching a peak in 1993 of 12 infant deaths per 1,000 live births. The infant mortality rate decreased from 1993 to 1996, but then increased in 1997. (Figure 5) The peak in 1993 may be due in part to an increase in deaths in the postneonatal period and an increase in the black infant mortality rate for that year.

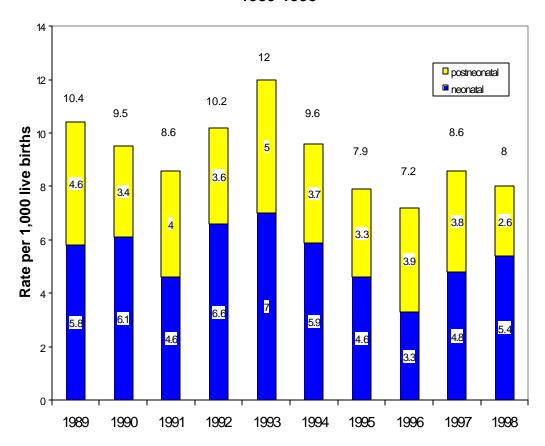


Figure 5: Infant Mortality by Age, Davidson County, TN, 1989-1998

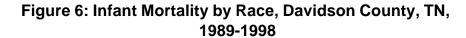
Note: Infant mortality-the number of infant deaths < 1 year of age per 1,000 live births; neonatal mortality-the number of infant deaths < 28 days per 1,000 live births; postneonatal mortality-the number of infant deaths 28 days to 1 year of age per 1,000 live births.

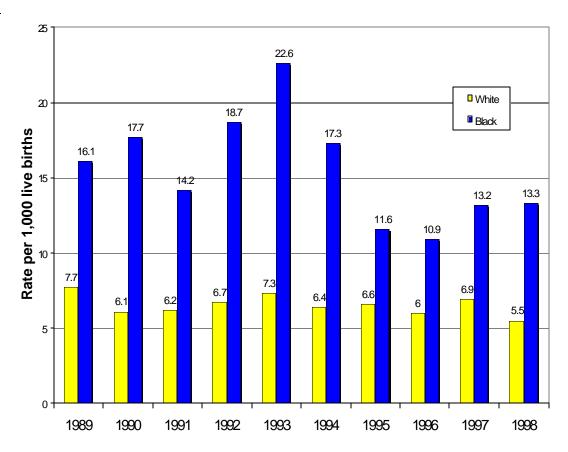
DAVIDSON COUNTY, TN

- During 1989-1998, an average of 8,436 babies were born per year.
- 487 were born to adolescents (10-17 years old) in 1998.

Race

The disparity between whites and blacks is consistently present over the 10-year period from 1989-1998. (Figure 6) As of 1998, the black infant mortality rate is 2.4 times higher than the white infant mortality rate. However, black infant mortality rates have declined by 41.2% since 1993 from 22.6 per 1,000 live births to 13.3 per 1,000 live births in 1998.





Note: Infant mortality-the number of infant deaths < 1 year of age per 1000 live births. Race is race of mother. Information on the 'other' race category was not reported due to heterogeneity and small numbers.

Low Birthweight

Low birthweight (LBW) and short gestation, or preterm delivery, are considered risk factors for infant mortality. Yet, with advancing technology, medicine is able to save infants who would have otherwise been considered non-viable in the past. However, these infants may grow up to have serious health problems because of low birthweight and short gestation. It is important to note that infant mortality rates do not give information on the morbidity of these infants. In Davidson County, Tennessee, the low birthweight rate has increased by 10.2% from 1989 to 1998. (Table B-6 in Appendix) In 1998, the black low birthweight rate was 15.2 per 100 live births compared to the white low birthweight rate of 7.3. This disparity remained fairly constant over the ten-year period. (Figure 7)

Black per 100 live births 10 All races White

Figure 7: Low Birthweight Rate by Race, Davidson County, TN, 1989-1998

Leading Causes

The leading causes of infant death are 1) congenital anomalies, 2) SIDS or sudden infant death syndrome, and 3) short gestation/low birthweight. (Figure 8) The three leading causes of death for neonates are 1) short gestation/low birthweight, 2) congenital anomalies, and 3) respiratory distress syndrome. (Figure 9) For postneonatal mortality, the leading causes of death are 1) SIDS or sudden infant death syndrome, 2) congenital anomalies, and 3) injuries. (Figure 10)

Figure 8: Leading Causes of Infant Death, Davidson County, TN, 1998

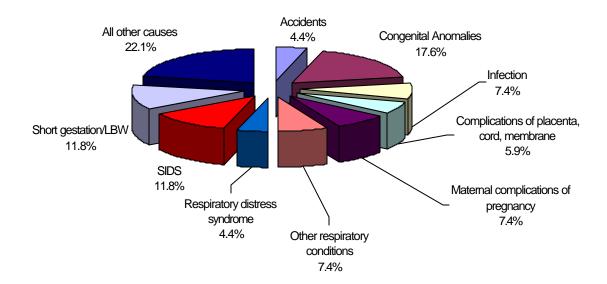


Figure 9: Leading Causes of Neonatal Death, Davidson County, TN, 1998

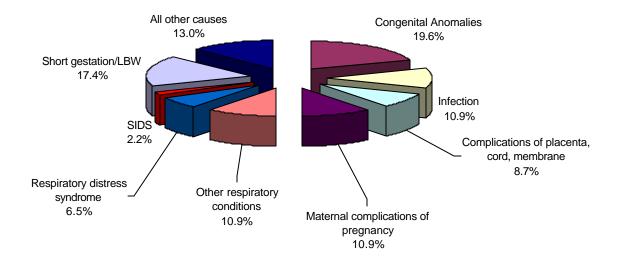
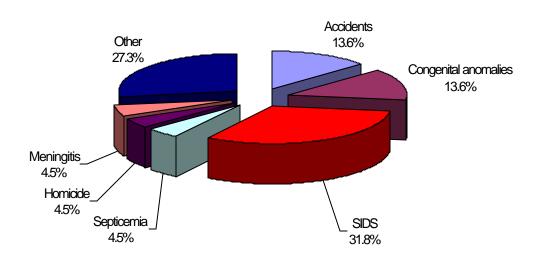


Figure 10: Leading Causes of Postneonatal Mortality, Davidson County, TN, 1998

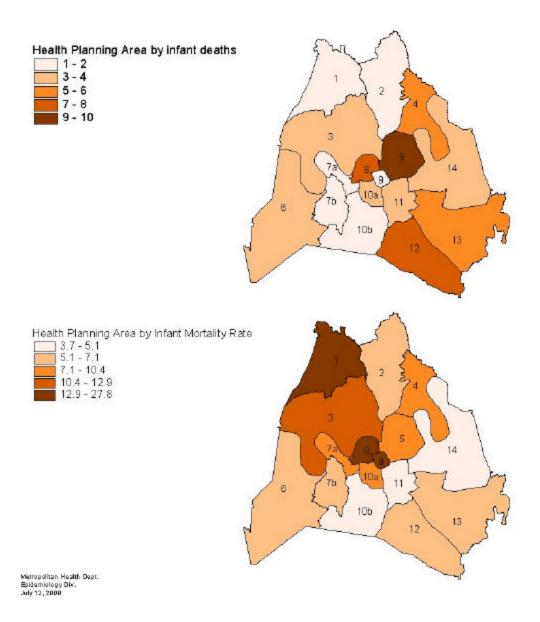


Planning Districts

Figure 11 displays the number of infant deaths and the infant mortality rate per 1,000 live births at the planning district level for Davidson County, Tennessee. Planning districts 1, 8, and 9 have the highest infant mortality rates in the county. However, these rates are based on small numbers and comparisons should be made with caution. Of the infant deaths reported in 1998, there were five where the planning district level was unknown. (Table B-5 in Appendix)

Figure 11: Number of infant deaths and infant mortality rates by planning districts, Davidson County, TN, 1998.

Infant Mortality by Health Planning Areas Metropolitan Nashville/Davidson County, 1998





How Did Davidson County Compare to Tennessee and the U.S.?

1989 - 1998

n comparison to the state and the nation, Davidson County, TN varies in averaging better or worse than Tennessee and the United States in each category of fetal and infant mortality depending on race.

DAVIDSON COUNTY, TN

- Fetal mortality rates, Davidson County, TN,
 Tennessee, and U.S.
- Infant mortality rate, Davidson County, TN, Tennessee, and U.S.

Observed Trends

Fetal Mortality Comparisons

In Figure 12, fetal mortality rates are compared for a ten-year period from 1989 to 1998 among Davidson County, TN, the state of Tennessee and the United States. Davidson County, TN and Tennessee's fetal mortality rates are below that of the United States. Davidson County's rates have been for the majority, lower than that of Tennessee. However, in 1998, Davidson County's rates have begun to increase in part due to the widening of the gap between the black and white fetal mortality rates. (See Figure 2, Chapter 1).

U.S.

Davidson County

1989 1990 1991 1992 1993 1994 1995 1996 1997 1998

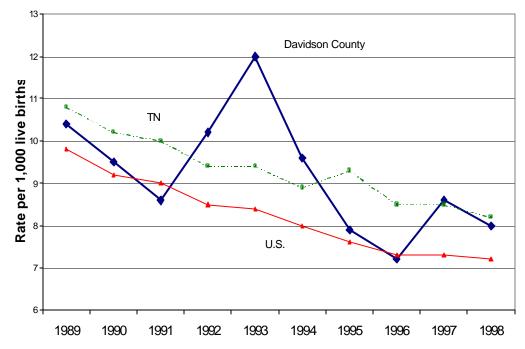
Figure 12: Fetal Mortality Rate, Davidson County, TN, Tennessee, and United States, 1989-1998

Infant Mortality Comparisons

As shown in Figure 13, on average over the ten-year period, Davidson County, Tennessee and the state of Tennessee's infant mortality rates have been higher than the rate for the United States. The infant mortality rate of the United States has maintained a steady decline from 1989-1998. The infant mortality rate in the U.S. has decreased by 26.5% from 9.8 infant deaths per 1,000 live births in 1989 to 7.2 per 1,000 live births in 1998. This

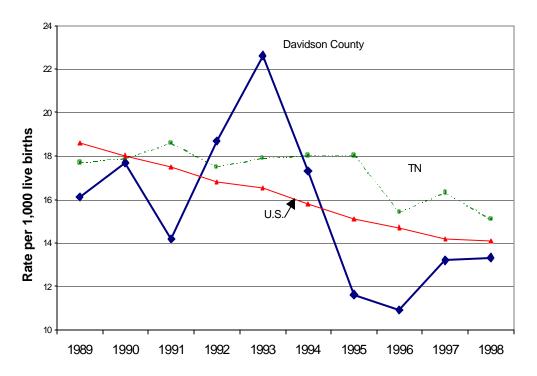
trend was similar in the state of Tennessee. However, in Davidson County, Tennessee the pattern was very different. In the early 90's, Davidson County's infant mortality rate was below that of Tennessee's and similar to the national rates. However, the infant mortality rate peaked in 1993 and remained above that of the United State's with the exception of 1996.

Figure 13: Infant Mortality Rate All Races, Davidson County, TN, Tennessee, and U.S., 1989-1998



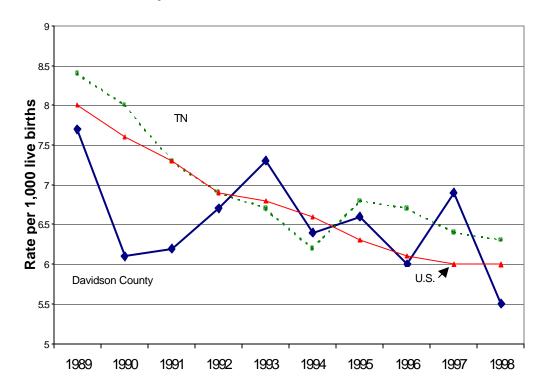
In Davidson County, Tennessee, the black infant mortality rate fluctuated dramatically between 1989-1998. From 1991 to 1998, the black infant mortality rate in Tennessee has been consistently above the rate of the United States. However, since the peak in 1993, Davidson County's black infant mortality rate remained lower than the rates of Tennessee and the United States. (Figure 14)

Figure 14: Black Infant Mortality Rates, Davidson County, TN, Tennessee, and U.S., 1989-1998



In Davidson County, Tennessee, the white infant mortality rate fluctuated between 1989-1998. (Figure 15) Between 1989-1992, the white infant mortality rate was below that of Tennessee and the United States. However, in 1993 and 1997, the white infant mortality rate in Davidson County peaked above that of Tennessee and the United States.

Figure 15: White Infant Mortality Rates, Davidson County, TN, Tennessee, and U.S., 1989-1998





Will Davidson County Reach Healthy People 2000/2010 Objectives?

1989 - 1998

Healthy People 2000 Objective

PEOPLE

Fetal Mortality
Objectives

Infant Mortality

Objectives

id Davidson County, Tennessee achieve the Healthy People 2000 objectives? Based on current data, Davidson County's rates remain well above the set objectives. The Healthy People 2000 objective for fetal mortality was 5.0 fetal deaths per 1,000 live births plus fetal deaths. The black fetal mortality objective was 7.5. (Figure 16). The objectives set for Healthy People 2000 were for the overall infant mortality rate to decrease to 7 infant deaths per 1,000 live births and for blacks 11 per 1,000 live births. Davidson County's rates as of 1998 remained above these objectives. (Figure 17)

Healthy People 2010 Objective

The Healthy People 2010 overall objective for fetal mortality rates is 4.1 fetal deaths per 1,000 fetal deaths plus live births regardless of race. (Figure 18) Healthy People 2010 has set an overall objective of 4.5 infant deaths per 1,000 live births. (Figure 19) It was determined that there should be equal objectives for all groups of people. In order to meet the objectives set for the nation, Davidson County's fetal mortality rate must decrease by 31.7% and the infant mortality rate by 77.8% by 2010.

Healthy People 2000 Objectives

Figure 16: Fetal Mortality Rate by Race, Davidson County, TN, 1989-1998

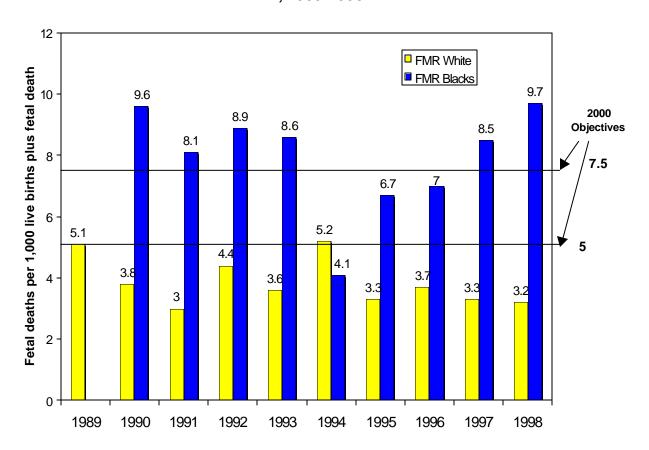
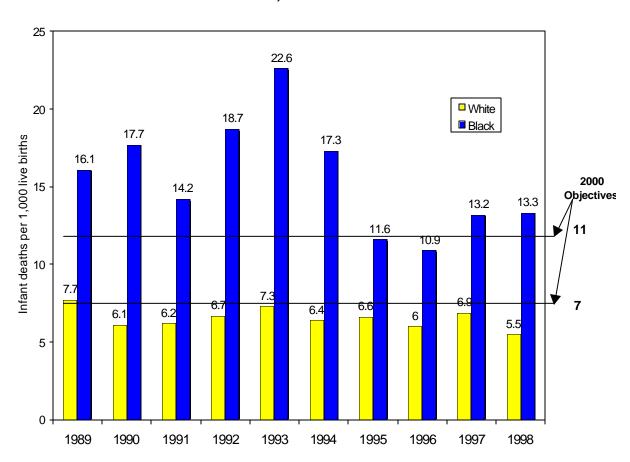


Figure 17: Infant Mortality Rate by Race, Davidson County, TN, 1989-1998



Healthy People 2010 Objectives

Figure 18: Fetal Mortality Rate by Race, Davidson County, TN, 1989-1998

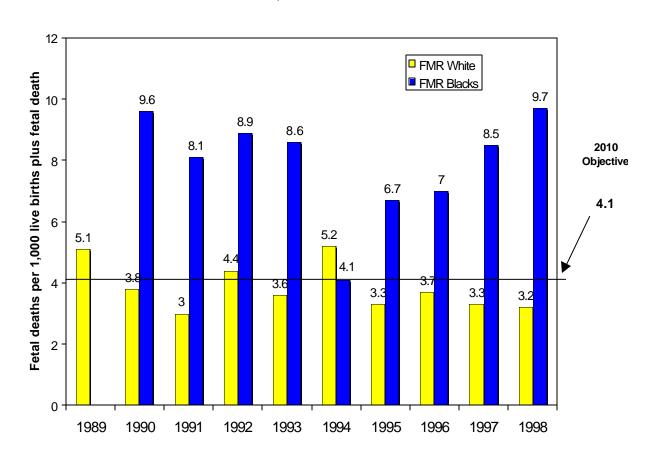
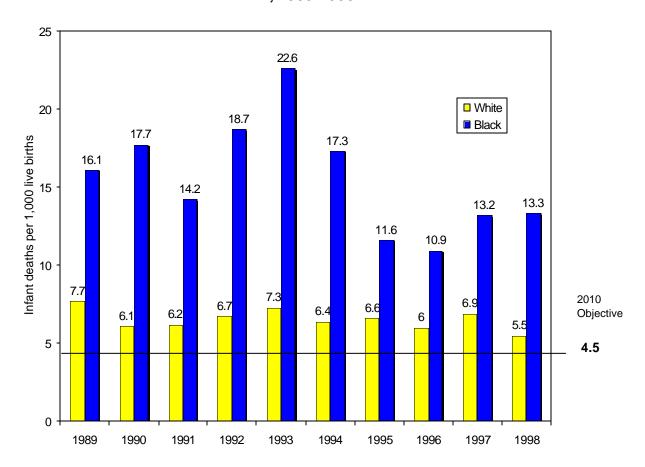


Figure 19: Infant Mortality Rate by Race, Davidson County, TN, 1989-1998



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Technical Notes

Data

The data contained in this report was obtained from the Tennessee Department of Health (TDH) and from records kept at the Metropolitan Health Department of Nashville and Davidson County, TN. The data was compiled mostly from the original birth, death, and fetal death certificates collected by the Metropolitan Health Department of Nashville and Davidson County, TN (MHD). United States data and information on the Healthy People 2000/2010 objectives were obtained from the U.S. Department of Health and Human Services. Mortality data for the State of Tennessee was obtained from the Tennessee Department of Health and the website: SPOT (Statistical Profiling of Tennessee)

http://web.utk.edu/~chrg/hit/main/SPOT/frames/SPOT/index.htm and Tennessee Vital Statistics http://www.state.tn.us/health/statistics, accessed between June and July 2000.

Cause of Death

For the purpose of mortality data, one underlying cause of death is reported on death certificates. The accuracy of data depends on the thoroughness of the individuals who complete the death certificates. In the case of Sudden Infant Death Syndrome (SIDS) and unspecified causes of death, autopsies would help in determining the accuracy of the information reported on the death certificates. Table B-7 in Appendix B lists the underlying cause of death codes according to the International Classification of Diseases, Ninth Revision (ICD-9) that can be used to report the leading causes of fetal death from fetal death certificates.

Planning Districts

For planning purposes, Nashville has been divided into sixteen planning districts (PDs). Originally, there were fourteen planning districts. They were geographical subdivisions of the county adopted by the Metropolitan Planning Commission. Each planning district consists of one to sixteen 1990 census tracts. Due to noticeable changes in demographic factors in planning districts 7 and 10, it was decided in 1998 to divide planning districts 7 and 10 into two subdivisions, i.e., PD 7 south (7b), PD 7 north (7a), PD 10 south (10b), and PD 10 north (10a). See Table B-8 on page 38 for a complete list of planning districts by number and name,

Residential Data

Data presented here is for Davidson County, TN residents only. Non-residents were excluded in this report even if the birth and/or fetal/infant death occurred within Davidson County, TN.

Rates

The rates were calculated:

Fetal mortality rate =	number of fetal deaths for specific group	×	1,000
	number of live births plus fetal deaths for specific group		
Infant mortality rate =	number of infant deaths < 1 year of age for specific group	×	1,000

number of live births for specific group

Neonatal mortality rate = number of neonatal deaths < 28 days of age \times 1,000

for specific group

number of live births for specific group

Postneonatal = number of postneonatal deaths 28-365 days of age \times 1,000

mortality rate for specific group

number of live births for specific group

LBW rate = number of infants weighing $< 2500 \text{ grams} \times 100$

for specific group

number of live births for specific group

Software

Data was analyzed using Microsoft Excel 97, Microsoft Access 97, and SPSS 9.0. Maps were produced using MapInfo Professional Version 6.5. The layout and design of the report were prepared using Microsoft Word 97.

Glossary

Fetal death (reportable)-a fetal death of 500 grams or more, or in the absence of weight, at least 22 weeks gestation or more.

Fetal Mortality Rate-number of fetal deaths per 1000 live births plus fetal deaths.

Infant death - a death of a live-born infant under 1 year of age.

Infant mortality rate-number of infant deaths per 1000 live births.

Low birthweight-a live birth weighing less than 2500 grams or 5.5 pounds.

Low birthweight rate- number of live births weighing less than 2500 grams per 100 live births.

Neonatal death - a death of a live-born infant less than 28 days of age.

Neonatal mortality- number of neonatal deaths per 1000 live births.

Postneonatal death- a death of a live-born infant 28 days to 1 year of age.

Postneonatal mortality- number of postneonatal deaths per 1000 live births.

Table B-1. Infant mortality rates, and fetal mortality rates, according to race: Davidson County, TN, 1989-1998

Race and year	Infant ¹	Neonatal	Postneonatal	Fetal Mortality ²
All races		Deaths per 1,000 live births		
1989	10.4	5.8	4.6	5.5
1990	9.5	6.1	3.4	5.5
1991	8.6	4.6	4.0	4.5
1992	10.2	6.6	3.6	5.7
1993	12.0	7.0	5.0	5.1
1994	9.6	5.9	3.7	4.9
1995	7.9	4.6	3.3	4.6
1996	7.2	3.3	3.9	4.6
1997	8.6	4.8	3.8	4.8
1998	8.0	5.4	2.6	5.4
White ³				
1989	7.7	4.6	3.1	5.1
1990	6.1	4.4	1.7	3.8
1991	6.2	2.9	3.3	3.0
1992	6.7	4.4	2.3	4.4
1993	7.3	4.2	3.1	3.6
1994	6.4	4.0	2.4	5.2
1995	6.6	3.5	3.1	3.3
1996	6.0	2.2	3.8	3.7
1997	6.9	4.9	2	3.3
1998	5.5	3.4	2.1	3.2
Black ³	40.4	0.4	7.7	
1989	16.1	8.4	7.7	
1990	17.7	10.4	7.3	9.6
1991	14.2	8.2	6.0	8.1
1992	18.7	12.1	6.6	8.9
1993	22.6	13.2	9.4	8.6
1994	17.3	10.7	6.6	4.1
1995	11.6	7.6	4.0	6.7
1996	10.9	6.3	4.6	7.0
1997	13.2	4.8	8.4	8.5
1998	13.3	9.4	3.9	9.7

¹ Infant (under 1 year of age), Neonatal (under 28 days), Postneonatal (28-365 days).

²Number of fetal deaths at 22 weeks gestation or more (and/or 500 grams or more) per 1,000 live births plus fetal deaths.

³ Race of mother

Table B-2. Number of live births, infant, and fetal deaths, according to race: Davidson

County, TN. 1989-1998

Race and year	N, 1989-1998 Infant ¹	Neonatal	Postneonatal	Fetal ²	Live Births
All races		Num	ber of Deaths		
1989	91	51	40	48	8740
1990	83	53	30	48	8706
1991	75	40	35	39	8645
1992	86	56	30	48	8439
1993	100	58	42	43	8334
1994	78	48	30	40	8171
1995	65	38	27	38	8218
1996	59	27	32	38	8245
1997	72	40	32	40	8359
1998	68	46	22	46	8502
White ³					
1989	45	27	18	30	5874
1990	36	26	10	23	5962
1991	36	17	19	17	5820
1992	38	25	13	25	5714
1993	40	23	17	20	5503
1994	35	22	13	29	5518
1995	36	19	17	18	5449
1996	33	12	21	20	5501
1997	38	27	11	18	5514
1998	31	19	12	18	5597
Black ³					
1989^				17	
1990	46	27	19	25	2592
1991	38	22	16	22	2687
1992	48	31	17	23	2564
1993	60	35	25	23	2642
1994	42	26	16	10	2433
1995	29	19	10	17	2514
1996	26	15	11	17	2399
1997	33	12	21	22	2571
1998	34	24	10	25	2552

Infant (under 1 year of age), Neonatal (under 28 days), Postneonatal (28-365 days).

Number of fetal deaths at least 22 weeks gestation and/or 500 grams or more.

Race of Mother

[△]Information was unavailable for year 1989.

Table B-3. Number of Fetal Deaths and Fetal Mortality Rates by Maternal Age and Race, Davidson County, TN, 1990-1998

Race and		Maternal Age in years		
year	<20	20-34	>35	
All races				
1990	7	35	4	
1991	17	20	2	
1992	8	34	6	
1993	5	31	6	
1994	10	28	2	
1995	7	24	7	
1996	4	27	6	
1997	10	24	5	
1998	5	39	2	
FMR ¹	6.4	6.7	5.4	
White ²				
1990	2	18	2	
1991	2	13	2	
1992	3	19	3	
1993	1	18	1	
1994	9	18	2	
1995	3	12	3	
1996	1	16	2	
1997	3	11	4	
1998	2	16	0	
FMR ¹	4.5	3.6	3.4	
Black ²				
1990	5	17	2	
1991	15	7	0	
1992	5	15	3	
1993	4	13	5	
1994	1	9	0	
1995	4	10	3	
1996	3	11	3	
1997	7	13	1	
1998	3	20	2	
FMR ¹	8.8	7.1	12.0	

Fetal Mortality Rate (FMR), fetal deaths per 1,000 live births plus fetal deaths between 1990-1998 stratified by age. Race of mother

Table B-4. Number and Percentage of Fetal Deaths by Age and Race, Davidson County, TN, 1989-1998

Race	Age <20	Age 20-34	Age >35
White	26	141	19
Black	47	115	19
Other	0	6	2
All	73	262	40
5	4 00		
Race	Age <20	Age 20-34	Age >35
White	7.9%	37.8%	4.8%
Black	12.2%	30.4%	4.5%
Other		1.9%	0.5%
All	20.1%	70.1%	9.8%

Table B-5. Number of infant deaths and infant mortality rates by Planning District, Davidson County, TN, 1998

Planning Districts	Infant Deaths	Live Births	IMR ¹
1	1	50	20
2	2	283	7.1
3	4	309	12.9
4	5	608	8.2
5	10	1115	9.0
6	3	483	6.2
7a	2	192	10.4
7b	2	352	5.7
8	7	367	19.1
9	1	36	27.8
10a	3	311	9.7
10b	2	439	4.6
11	3	588	5.1
12	8	1261	6.3
13	6	936	6.4
14	4	1075	3.7
Unknown	5	97	
Total	68	8502	8.0

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¹ Infant Mortality Rate-the number of infant deaths < 1 year of age per 1,000 live births.

Table B-6. Number of low birthweight (LBW) infants and rates according to race: Davidson County, 1989-1998

Race and	1	Rate per 100	Live
year	LBW ¹	Live Births	Births
All races			
1989	768	8.8	8740
1990	787	9.0	8706
1991	764	8.8	8645
1992	752	8.9	8439
1993	787	9.4	8334
1994	793	9.7	8171
1995	762	9.3	8218
1996	765	9.3	8245
1997	798	9.5	8359
1998	833	9.8	8502
White ²			
1989	384	6.5	5874
1990	405	6.9	5962
1991	373	6.4	5820
1992	379	6.6	5714
1993	387	7.0	5503
1994	427	7.7	5518
1995	388	7.1	5449
1996	400	7.3	5501
1997	403	7.3	5514
1998	409	7.3	5597
Black ²			
1989 1990	358	13.8	 2592
1990	381	14.2	2687
	358	14	
1992 1993	386	14.6	2564 2642
1993	350	14.4	2433
	348	13.9	2433 2514
1995 1996	327	13.6	2399
1996	371	14.9	2599 2571
	388	15.2	2571 2552
1998	330	10.2	2002

Low birthweight- infants weighing less than 2,500 grams at birth. Race of Mother

Table B-7. List of ICD-9 Codes reported on fetal death certificates.

Congenital anomalies	ICD-9 code 740.0-759.7
Maternal conditions unrelated to pregnancy	ICD-9 code 760.0-760.8
Maternal complications of pregnancy	ICD-9 code 761.0-761.6
Complications of placenta, cord, and membranes	ICD-9 code 762.0-762.7
Complications of labor and delivery	ICD-9 code 763.0-763.8
Short gestation/ low birthweight	ICD-9 code 765.0-765.1
Hypoxia/ asphyxia	ICD-9 code 768.0
Unknown	ICD-9 code 778.9

Table B-8. List of planning districts by number and name.

1	Joelton
2	Bellshire / Union Hill
3	Bordeaux / Whites Creek
4	Madison / Goodlettsville
5	East Nashville / Inglewood
6	Bellevue
7a	The Nations / Sylvan Park
7b	Belle Meade / West Meade
8	North Nashville
9	Downtown
10a	West End / Vanderbilt
10b	Forest Hills / Oak Hill
11	Berry Hill / Woodbine
12	Tusculum / Crieve Hall
13	Priest Lake / Antioch
14	Donelson / Hermitage